

REMARKS

Applicant has reviewed the Office Action dated August 8, 2002, and the references cited therewith. Claims 1, 28, 58, 63, and 91 are amended. No claims are cancelled or added. As a result, claims 1-91 are presently pending in this patent application.

Objection to the Specification

In the Office Action, the specification was objected to as failing to provide proper antecedent basis for the claim term "recursively." However, Applicant has amended the claims such that the claims no longer include the term "recursively." Accordingly, Applicant respectfully requests withdrawal of this objection.

§102 Rejection of the Claims

1. Claims 1 - 91 were rejected under 35 U.S.C. § 102(f), alleging that the Applicant did not invent the claimed subject matter because the application contains different inventors than Kramer et al. (U.S. Patent No. 6,285,907), which discloses the claimed subject matter and allegedly "does claim the same subject matter as in the applicant's claims, as shown by the previous double patenting rejection (and applicant's filing of a terminal disclaimer)." Applicant traverses.

Applicant's review of the commonly-assigned Kramer et al. patent (the application for which was filed on the same day as the present patent application) did not identify any claims in the Kramer et al. patent that are identical to the presently pending patent claims. Applicant further notes that the Kramer et al. patent shares common inventors with the present patent application.

Furthermore, Applicant respectfully traverses any assertion that the previous nonstatutory double patenting rejection and applicant's filing of a terminal disclaimer are evidence of identical claims in Kramer et al. and the present patent application. To the contrary, Applicant respectfully submits that the previous non-statutory double patenting rejection and applicant's filing of a terminal disclaimer actually provide evidence against the assertion that any of the present claims are identical to claims in Kramer et al., because a non-statutory double patenting

rejection would have been inappropriate in such an instance. *See* M.P.E.P § 804 (distinguishing between statutory and nonstatutory bases of double patenting). Therefore, Applicant respectfully requests withdrawal of this basis of rejection.

2. Claims 1 - 3, 26, 27, 58, 59, 63, 88, 89 and 91 were rejected under 35 U.S.C. § 102(e) for anticipation by Hill (U.S. Patent No. 5,814,085). Applicant traverses.

Claims 1 - 3, 26, and 27 presently recite or incorporate, among other things, computing a first indicated pacing interval “by averaging a most recent V-V interval duration with a stored previously-computed value of the first indicated pacing interval. Applicant can find no such disclosure in Hill. Instead, Hill apparently teaches computing a pacemaker defined escape interval T_e that differs from a preceding (paced or intrinsic) escape interval by an increment dT . (*See* Hill at column 1, lines 49 - 53.) The increment dT in Hill—and not the new escape interval—is apparently computed (at least in one embodiment) as an average of cycles preceding the cycle (CL_{new}) ending in the most recently sensed depolarization. (*See* Hill at column 2, lines 2-4 and lines 14-21.) However, in all embodiments of Hill, the increment dT is apparently then added to the preceding escape interval T_e to obtain a new escape interval T_e . (*See, e.g.*, Hill at column 3, lines 34-40.) By contrast, claims 1 - 3, 26, and 27 presently recite obtaining a new first indicated pacing interval—not by adding an increment computed using an average—but instead by averaging the most recent V-V interval duration with a stored previously-computed value of the first indicated pacing interval. Therefore, because Hill does not disclose all elements presently recited in claims 1 - 2, 26, and 27, Applicant respectfully requests withdrawal of this basis of rejection of these claims.

Claim 58 presently recites a controller that computes a first indicated pacing interval by averaging a most recent V-V interval duration with a stored previously-computed value of the first indicated pacing interval. Applicant can find no such disclosure in Hill, which instead apparently uses the different techniques discussed above with respect to claims 1 - 3, 26 and 27.

Claims 63, 88, and 89 presently recite or incorporate a filter that updates a first indicated pacing interval by averaging the most recent V-V interval stored in the V-V interval timer with a previously-computed stored value of first indicated pacing interval stored in a first register.

Applicant can find no such disclosure in Hill, which instead apparently uses the different techniques discussed above with respect to claims 1 - 3, 26 and 27.

Claim 91 presently recites a means for updating the first indicated pacing interval by averaging a most recent V-V interval duration with a stored previously-computed value of the first indicated pacing interval. Applicant can find no such disclosure in Hill, which instead apparently uses the different techniques discussed above with respect to claims 1 - 3, 26, and 27.

In view of the above, Applicant respectfully requests withdrawal of this basis of rejection of claims 1 - 3, 26, 27, 58, 63, 88, 89 and 91.

§103 Rejection of the Claims

Claims 23 - 25, 64 and 67 - 70 were rejected under 35 U.S.C. § 103(a) for obviousness over Hill. Applicant traverses. The Examiner's burden of establishing a *prima facie* case of obviousness requires, among other things, that each and every one of the recited claim limitations are taught or suggested in the cited prior art reference(s) independent of the teaching in the applicant's disclosure. *See In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991); M.P.E.P. § 2142.

Claims 23 - 25 presently incorporate, by their dependency from independent claim 1, computing a first indicated pacing interval "by averaging a most recent V-V interval duration with a stored previously-computed value of the first indicated pacing interval. Applicant can find no such disclosure, teaching, or suggestion in Hill, which, as discussed above, apparently computes an increment dT that is then added to the preceding escape interval T_e to obtain a new escape interval T_e . By contrast, claims 23 - 25 involve obtaining a new first indicated pacing interval—not by adding an increment computed using an average—but instead by averaging the most recent V-V interval duration with a stored previously-computed value of the first indicated pacing interval. Therefore, because no *prima facie* case of obviousness presently exists with respect to claims 23- 25, Applicant respectfully requests withdrawal of this basis of rejection of these claims.

Claims 64 and 67-70 presently incorporate, by their dependency from independent claim 63, a filter that updates a first indicated pacing interval by averaging the most recent V-V interval

stored in the V-V interval timer with a previously-computed stored value of first indicated pacing interval stored in a first register. Applicant can find no such disclosure, teaching, or suggestion in Hill. Therefore, because no prima facie case of obviousness presently exists with respect to claims 23- 25, Applicant respectfully requests withdrawal of this basis of rejection of these claims.

Moreover, Applicant respectfully submits that the above-cited claim limitations (for which Applicant could find no disclosure, teaching, or suggestion in Hill) do provide the criticality or unexpected results needed to rebut any assertion of obviousness. One example of a clinically significant difference between Hill and the present claims 23 - 25, 64 and 67 - 70 is that Hill expressly teaches away from rate stabilization that reduces sensitivity to sensed short intervals. In the "Summary of the Invention," Hill contrasts his rate stabilization technique with other rate stabilization pacemakers:

While these pacemakers accomplish the desired result of preventing the short-long cycle patterns sometimes associated with the onset of tachycardias, they do not take into account the underlying heart rate or the degree of prematurity of the sensed heart depolarization in calculating the value of the increment. The present invention varies the increment following a cycle ending in a sensed depolarization as a function of the underlying heart rate and may additionally vary the increment as a function of the prematurity of the most recently sensed depolarization relative to the preceding depolarization. . . . The mechanism of the present invention for determining the duration of the increment provides for a more rapid return to a lower underlying heart rate, while still avoiding the short-long interval pattern sometimes associated with the onset of tachycardia. It is believed that this mechanism of controlling the escape intervals in a rate stabilization pacing mode may assist in avoiding arrhythmias by reducing the amount of pacemaker-induced fluctuation of the heart's refractory period.

(Hill at column 1, line 55 to column 2 line 13.) Therefore, Hill apparently teaches rate stabilization that attempts to more closely follow sensed heart rate up and down so that the pacing rate doesn't get stuck up at high heart rates. By contrast, the implementation claimed in the present claims 23 - 25, 64 and 67 - 70 decreases sensitivity to sensed short intervals so that the indicated pacing rate is not driven up to excessively high heart rates in the first place. Therefore, the recursive implementation claimed in the present patent application is believed to be much better suited for patients with atrial fibrillation.

AMENDMENT & RESPONSE UNDER 37 C.F.R. § 1.116 - EXPEDITED PROCEDURE

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Title: METHOD AND APPARATUS FOR TREATING IRREGULAR VENTRICULAR CONTRACTIONS SUCH AS DURING ATRIAL ARRHYTHMIA

In view of the above, Applicant respectfully requests withdrawal of this basis of rejection of claims 23 - 25, 64 and 67 - 70.

Conclusion

Applicant respectfully submits that the claims are in condition for allowance and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney (612 373-6951) to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

Respectfully submitted,

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CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to: Box RCE, Commissioner of Patents, Washington, D.C. 20231, on this 9 day of December, 2002.

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